

Fifty-nine presents were announced as having been received since the last meeting, including, amongst others,

A. A. Michelson, On the application of interference methods to spectroscopic measurement, presented by the author; Rev. S. Kinns, Graven in the Rock, presented by the author; Photographs of the Lick Observatory, presented by the Observatory.

Preliminary Report of the Joint Solar Eclipse Committee of the Royal Society, the Royal Astronomical Society, and the Solar Physics Committee on the Observations of the Solar Eclipse of 1893 April 16. By A. A. Common, LL.D., F.R.S., Secretary to the Joint Solar Eclipse Committee.

Abstract.

The Joint Committee have requested me to make the following brief report on the observations of the eclipse. This will be followed shortly by a more complete report.

The Joint Committee was formed early in 1892; a grant of money was obtained from the Government Grant Fund of the Royal Society, and preparations were at once begun. After due consideration it was decided to send out two observing expeditions, one to Fundium, on the Salum River, in Senegambia, and one to Pará-Curu, in the Province of Ceará, in the northern part of Brazil. With the exception of the work undertaken by Professor Thorpe, the whole of the observations were photographic. Three classes of work were undertaken at each station.

1st. Photographs of the Corona, in continuation of a long and very complete series already taken with the "Abney" lens, and similar photographs on three times the scale, by means of a negative enlarging lens by Dallmeyer.

2nd. Photographs of the surroundings of the Sun by means of a prism in front of the object-glass. (Prismatic camera.)

3rd. Photographs of the spectrum of the Corona by slit spectroscopes.

The West African Expedition was placed in charge of Professor Thorpe, F.R.S. Professor Thorpe, assisted by Mr. Gray and Mr. Forbes, undertook the determination of the photometric intensity of the coronal light by the method he used at the Solar Eclipse of 1886 in Granada. A complete and satisfactory series of observations was made.

Mr. A. Fowler undertook the prismatic camera observations, using a 6-inch telescope, lent by Mr. Lockyer, with a large prism in front of the object-glass. Mr. Fowler took six plates before and after totality, and fifteen during totality. The photographs are considered by Mr. Lockyer, at whose wish this investigation was made, to be of very great value.

Sergeant Kearney, R.E., had charge of the coronagraph.

With the Abney and Dallmeyer lenses and a double camera eleven pictures of the Corona were secured, which are of a most satisfactory character.

Captain E. H. Hills, R.E., undertook the slit spectroscopes, and obtained two excellent photographs.

Mr. A. Taylor and Mr. W. Shackleton formed the expedition to Brazil. The coronagraph was placed in charge of Mr. Taylor, as well as the slit spectroscopes, to be used if the necessary local help could be obtained. Twelve photographs of the solar Corona were obtained, of a similar character to those obtained in Africa, and directly comparable with them as regards exposure, density, and detail of the coronal structure. Most of those coronal plates have Captain Abney's density squares impressed upon them for determining the density of the photographic image. Two photographs with the slit spectroscopes were obtained.

Mr. Shackleton, with an arrangement somewhat similar to that employed by Mr. Fowler, took a large number of photographs; these are only less valuable than the African photographs in that the instrument employed was on a smaller scale.

The air at Fundium was hazy. At Pará-Curu the observations were made under particularly fortunate circumstances, as the Sun was clear of clouds only for a short time about the time of the eclipse.

Generally speaking, the results obtained are of a most satisfactory character. The photographs taken at each station provide a large amount of material to work upon, particularly those taken with the prismatic camera. From the distance apart of the two stations and the duplication of the work, a comparison may throw some light on the question of change of form and nature of the surroundings of the Sun during the interval between the observations. In this respect we may have the photographs taken at Chili to further extend this time interval.

The various members of the expeditions have enjoyed good health, and no one seems to have suffered injury from the excessive heat.

The Committee are under great obligations for much assistance given to the expeditions. The work of observation in Africa was made on French territory. The French Government did everything possible in granting a choice of sites, and M. Victor Allys, the French Administrator at Fundium, gave most valuable help.

The Admiralty gave us a gunboat to take the party up the Salum River and attend on them during the time this work lasted, and a cruiser brought the party from Bathurst to Grand Canary. The value of the help afforded by the Admiralty can be appreciated when it is known that without it this expedition could not have been sent.

From many other quarters most valuable aid has been received, and will be more fully acknowledged in the General Report.

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